

Exercise 30

For the following exercises, consider the function $f(x) = \frac{x^2-1}{|x^2-1|}$.

Complete the following table for the function. Round your solutions to four decimal places.

x	$f(x)$		x	$f(x)$
0.9	a.		1.1	e.
0.99	b.		1.01	f.
0.999	c.		1.001	g.
0.9999	d.		1.0001	h.

Solution

Plug in the given values of x into the function.

$$\text{a.} \quad f(0.9) = \frac{(0.9)^2 - 1}{|(0.9)^2 - 1|} = -1.0000$$

$$\text{b.} \quad f(0.99) = \frac{(0.99)^2 - 1}{|(0.99)^2 - 1|} = -1.0000$$

$$\text{c.} \quad f(0.999) = \frac{(0.999)^2 - 1}{|(0.999)^2 - 1|} = -1.0000$$

$$\text{d.} \quad f(0.9999) = \frac{(0.9999)^2 - 1}{|(0.9999)^2 - 1|} = -1.0000$$

$$\text{e.} \quad f(1.1) = \frac{(1.1)^2 - 1}{|(1.1)^2 - 1|} = 1.0000$$

$$\text{f.} \quad f(1.01) = \frac{(1.01)^2 - 1}{|(1.01)^2 - 1|} = 1.0000$$

$$\text{g.} \quad f(1.001) = \frac{(1.001)^2 - 1}{|(1.001)^2 - 1|} = 1.0000$$

$$\text{h.} \quad f(1.0001) = \frac{(1.0001)^2 - 1}{|(1.0001)^2 - 1|} = 1.0000$$